

Hiroshi HARA*: A revision of the genus
Chionographis (Liliaceae)

原 寛*: シライトイソウ属の再検討

(Pl. XVII~XVIII)

The genus *Chionographis* is generally placed in the tribe Heloniadeae of Liliaceae, but it is unusual in having ebracteate sessile zygomorphic flowers with very unequal tepals, 2 collateral ovules in each cell of the ovary, and 4-porate pollen grains. It is certainly most closely allied to *Chamaelirium* Willd. of Eastern North America, although the latter has pedicellate actinomorphic dioecious flowers with 6 equal tepals, 6—12 ovules in each cell of the ovary, and seeds winged around. The flowers of *Chionographis* are andro-polygamous, i. e. hermaphrodite or staminate, and some individuals bear only staminate flowers lacking pistil.

The genus must be of a very ancient origin, and is now distributed disjunctly in Japan, Quelpaert, and South China (Fig. 1). Six species have hitherto been described under the genus, but after a careful study, I came to the conclusion that the genus is represented by 4 species, two in Japan and two in China. In Japan, *Chionographis japonica* seems to be on the way of speciation, and its two subspecies have already been well differentiated biologically from the mother species.

D. Sato (1942) stated that the karyotype of *Chionographis* resembles that of *Japonolirion*. However, *Japonolirion* has actually $2n=26$ chromosomes, and in my opinion, it should be placed in the tribe Narthecieae bearing a close affinity with *Narthecium* or *Tofieldia*.

I express my sincere thanks to the curator of Harvard University Herbaria for sending me the specimens from China on loan.

Chionographis Maximowicz [nom. conserv.] in Bull. Acad. Sci. St.-Pétersb. **11**: 435 (1867)—Baker in Journ. Linn. Soc. **17**: 411 & 469 (1879)—Bentham et Hooker, Gen. Pl. **3**: 826 (1883)—Engler, Pfl.-fam. ed. 1, **2** (5): 22 (1888)—Baillon, Hist. Pl. **12**: 593 (1894)—Krause in Engler, Pfl.-fam. ed. 2, **15a**: 258 (1930)—Hutchinson, Fam. Flow. Pl. **2**: 85 (1934); ed. 2, **2**: 595 (1959)—F. Mackawa in

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Journ. Jap. Bot. **11**: 378 (1935)—Hara in Acta Phyt. Geobot. **20**: 34 (1962).

Siraitos Rafinesque [nom. rejic.] Fl. Tellur. **4**: 26 (1838)—Wang et Tang in Contr. Inst. Bot. Nat. Acad. Peip. **6**: 108 (1949).

A glabrous perennial with a short stout rhizome. Basal leaves rosulate ovate—oblong or lanceolate petioled; caudine leaves much smaller and narrower. Flowering stem erect from the center of a rosette of the previous year, angular. Flowers in spike *andro-polygamous subsessile ebracteate zygomorphic* slightly scented. Tepals 6—3 linear 1-nerved *very unequal* persistent and withered; upper 4 or 3 much longer spreading; lower 3 or 2 very short or lacking. Stamens 6 short persistent; anthers *roundish* basifixed, 2-celled laterally dehiscent, sometimes confluent at the top into one cell; pollen grains *4-porate*. Ovary superior roundish-trigonous 3-celled, *2 collateral ovules in each cell*; styles 3 free linear, stigmatic along the inner side. Capsules loculicidally dehiscent. Seeds fusiform, with a short tail at the distal or proximal end. Chromosome numbers $2n=24$ or 42.

Type species: *C. japonica* (Willd.) Maxim.

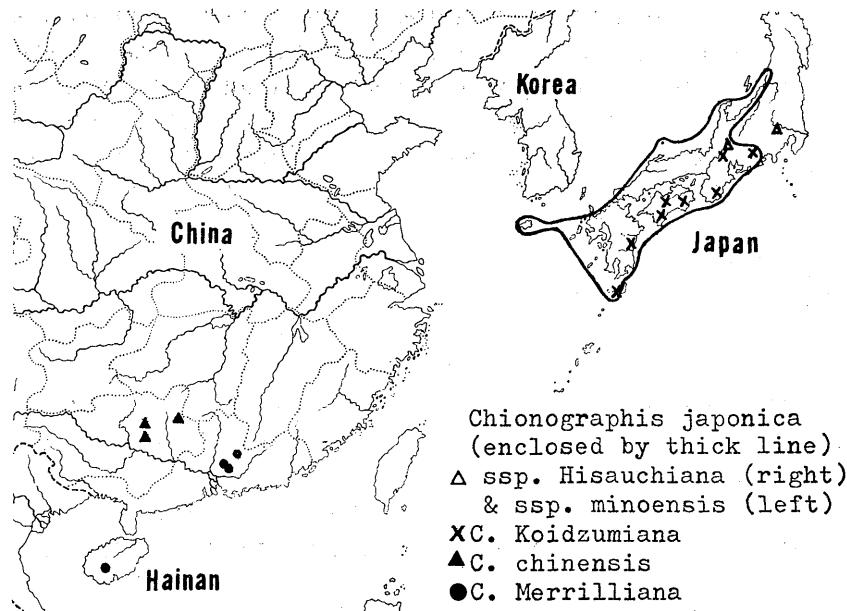


Fig. 1. The distribution of the genus *Chionographis*.

Key to the species

- 1 { Tepals spathulate-linear 0.5—0.8 mm wide in the upper part, white. Anthers 2-celled. 2
- Tepals filiform 0.2—0.4 mm wide, greenish white or dark purplish. Anthers confluent at the top into one cell. 3
- Stamens 1/7—1/3 (rarely 1/2) as long as the upper tepals, filaments thick filiform. Capsules oblong-ovate. Seeds tailed at the distal end. The upper tepals 3—15 mm long. Cauline leaves generally lanceolate and longer.
- 2 { 1) *C. japonica*
- The longer stamens 1/2 to nearly as long as the upper tepals, filaments filiform. Capsules obovate attenuate to the base. Seeds tailed at the proximal end. The upper tepals 3—5 mm long. Cauline leaves short oblong-lanceolate.
- 2) *C. Merrilliana*
- 3 { Capsules oblong-ovate ascending. Seeds ca. 3 mm long, tailed at the distal end. 3) *C. Koidzumiana*
- Capsules obovate attenuate to the base (spreading?). Filaments slender. Seeds smaller apiculate at both ends. 4) *C. chinensis*

The genus was divided into two sections by F. Maekawa (1935) based on the characters of tepals and anthers. In *C. japonica*, the anther is 2-celled and dehiscent laterally (cf. Fig. 2, b—d), and the tepals are linear-spathulate. Whereas in *C. Koidzumiana* the anther-cells are confluent at the top into one cell in a horseshoe shape, and after dehiscence the anther-wall is reflexed and rolled back as shown in Fig. 2, g—j, and the tepals are filiform. These differences are clearly observable in fresh materials, although two anther-cells are rarely partly confluent at the tip, and show somewhat transitional shape. Especially in herbarium materials after flowering, it is sometimes difficult to recognize the characters of anthers precisely. As pointed out by Murata (1953), these differences seem to be insufficient to separate the genus into two sections. However, it is very interesting that two species corresponding to *C. japonica* and *C. Koidzumiana* in the character of anthers and tepals occur also in South China, and these characters seem to have been differentiated in old age in this genus. It is also noteworthy that the two Chinese species have obovate capsules attenuate to the base, while the two Japanese species have ovate or oblong-ovate capsules (Fig. 3). Also the two Chinese species have slightly larger pollen grains than *C. japonica*, and their sizes correspond with those of subsp. *Hisachiana* and subsp. *minoensis*. It is possible that the Chinese

plants are also high polyploids.

The chromosome number of *C. japonica* var. *japonica* and *C. Koidzumiana* is $2n=24=4L+20S$, and the basic number for the genus has often been considered as 12. However, it is remarkable that two subspecies of *C. japonica*, subsp. *Hisachiana* and subsp. *minoensis*, found near the eastern end of the distribution area of the species, have both $2n=42$ chromosomes (Hara 1961; Hara & Kurosawa 1962). If the basic number is presumed to be 6, then $2n=24$ can be interpreted as tetraploid, and 42 as heptaploid. But in both subspecies, the reduction division is regular with 21 chromosomes in pollen mother cells, the pollen grains are normal, and the capsules produce fertile seeds freely.

These facts suggest that the races with 42 chromosomes must be amphiploids of very old origin derived from an ancestral form with the basic number 6 or 7, and have already become established with the basic number 21. Thus they are now isolated cytogenetically from their putative mother species, and can be interpreted as distinct ecospecies.

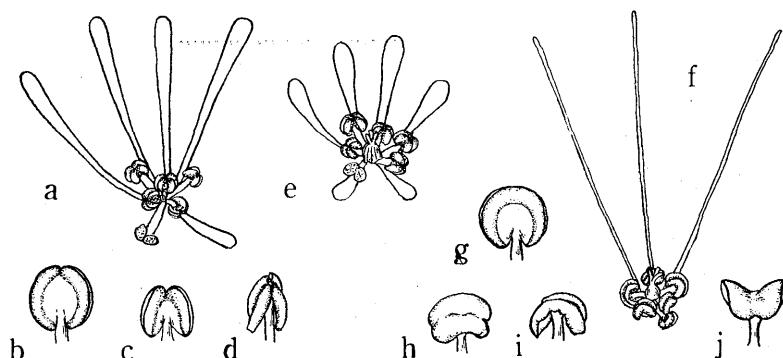


Fig. 2. Flowers ($\times 3$) and anthers. a-d. *Chionographis japonica* ssp. *japonica*. a. A flower from Ozoji, Prov. Mino. b. A young anther. c, d. Anthers after dehiscence. e. ssp. *minoensis*, a flower from Natsuzaka, Prov. Mino. f-j. *C. Koidzumiana*. f. A flower from Yakushima. g. A young anther. h-j. Anthers after dehiscence.

1) ***Chionographis japonica*** (Willd.) Maximowicz in Bull. Acad. Sci. St.-Pétersb. **11**: 436 (1867)—Baker in Journ. Linn. Soc. **17**: 469 (1879)—Hook. f. in Bot. Mag. t. 6510 (1880)—Yatabe, Icon. Fl. Jap. **1** (3): t. 59 (1893)—Matsum., Ind. Pl. Jap. **2** (1): 192 (1905)—Ohwi, Fl. Jap. 282 (1953); ed. engl. 281 (1965); ed. rev. 332 (1965)—Hara, Distr. Map. Flow. Pl. Jap. **2**: map. 193 (1959); in Act. Phyt. Geobot. **20**: 34 (1962)—Kurosawa et Hara in Journ. Jap. Bot. **35**: 43, f. 1 (1960)—

Kitamura et al., Col. Ill. Herb. Pl. Jap. **3**: 153, f. 105, 1—3 (1964).

Melanthium luteum Thunberg, Fl. Jap. 152 (1784), excl. basionym; in Skriv. Nat. Selsk. Kjöbenhavn **4** (2): 17, t. 8 (1798); nom. illegit.

M. japonicum Willd. in Ges. Nat. Freund Berl. Mag. **2**: 22 (1808).

Helonias? japonica (Willd.) J. A. et J. H. Schultes, Syst. Veg. **7**: 1567 (1830).

Siraitos aquaticus Rafinesque, Fl. Tellur. **4**: 27 (1838).

Chamaelirium luteum (Thunb.) Miquel in Ann. Mus. Lugd.-Bat. **3**: 144 (1867); in Arch. Néerl. Sci. Nat. **5**: 91 (1870); non A. Gray 1867.

Chionographis lutea (Thunb.) Baillon, Hist. Pl. **12**: 593 in adnota (1894).

C. japonica var. *yakusimensis* Masamune in Mem. Fac. Sci. Taihoku Univ. **11**: 550 (1934); in Sci. Rep. Kanazawa Univ. **5**: 106 (1957)—Okuyama in Journ. Jap. Bot. **19**: 131 (1943).

C. Koidzumii var. *yakusimensis* (Masam.) Masamune in Trans. Nat. Hist. Soc. Formos. **26**: 53 (1936).

Siraitos luteus (Thunb.) Wang et Tang in Contr. Inst. Bot. Nat. Acad. Peip. **6**: 109 (1949).

subsp. *japonica* var. *japonica*.

Radical leaves ovate to lanceolate or obovate-oblong obtuse or roundish rarely acutish at the apex, 1—15 cm long 6—50 mm wide crisuplicate on the margin, herbaceous green opaque; main lateral veins often elevated on the lower surface; short- or long-petioled, petioles up to 8 cm long. Stem 8—70 cm high. Cauline leaves 4—35 lanceolate to linear, sometimes crowded below the spike, 5—80 mm long. Spike 2—22 cm long often densely many-flowered. Upper tepals 4 or 3 elongate *spathulate-linear white* horizontally spreading 5—15 mm long 0.6—0.8 mm wide in the upper part; lower tepals very short 1—2 mm long or often lacking. Stamens 6, 1—3 mm long much shorter than the upper tepals; filaments white thick or clavate-filiform; anthers 2-celled whitish. Pollen grains 12—17×14—18 μ in size. Capsules oblong-ovate 2.5—4 mm long ascending. Seeds fusiform 2.5—3.5 mm long including the tail at the distal end. Chromosome number $n=12$, $2n=24$.

Distr. Japan. Honshu (west of Echigo and Suruga), Shikoku, and Kyushu.

C. japonica subsp. *japonica* is very variable especially in the size of leaves and flowers, and the shape of leaves. I have examined about 130 sheets of specimens from various parts of Japan. The plant-size varies considerably by growing conditions, while some populations show locally fixed characters even under different conditions of cultivation. The plants growing on the Japan-Sea side are usually

larger with a dense large-flowered spike and long tepals 10—15 mm long, as compared with those on the Pacific side. Especially those collected from such places as Miwa-mura-Mikawa, Mt. Rokkō-Settsu, Mt. Asama-Ise, Mt. Higashi-akaishi-Iyo of Shikoku, Mt. Aso-Higo and Is. Fukuejima-Gotō of Kyushu are always small with shorter upper tepals 5—7 mm long and slender petioles. It was proved by Kurosawa & Hara (1960 & 62) that these large and small races have both $2n=24$ chromosomes.

The plants of Is. Yakushima which are the southern limit of the distribution of the species are often small, and have generally narrower leaves 4—15 (20) mm wide and acute at the apex, slender petioles, shorter caudine leaves, and shorter upper tepals (4) 6—12 mm long. They are growing in evergreen forests at 600—800 m in altitude on mountain slopes, and flower from May to August. The chromosome number is the same as that of var. *japonica*. The similar form is found in the provinces Ōsumi, Awa (Shikoku), and Settsu.

The species is generally growing in shady places of woods. It is sometimes found on limestone, and rarely on wet serpentine rocks, and the plants there belong mostly to a small race. It thrives well around Tokyo situated far from the wild habitat. Even in Nikko north of Tokyo, it escaped from a garden of a temple, and was established in the *Cryptomeria* forest around the temple. Some plants from Mt. Kurokami of Prov. Hizen have very slender white tepals, and show somewhat intermediate characters between *C. japonica* and *C. Koidzumiana*.

var. **koreana** (Wang et Tang) Okuyama in Journ. Jap. Bot. 19: 130 (1943).

C. koreana Wang et Tang in Bull. Fan Mem. Inst. Biol. Peip. 7: 82 (1936).

Siraitos koreanus (Wang et Tang) Wang et Tang, l. c. 109 (1949).

Radical leaves lanceolate or oblong obtuse at the apex 1—4.5 cm long 5—10 mm wide; petioles slender 8—40 mm long. Stem 12—25 cm high. Cauline leaves lanceolate 10—25 mm long. Upper tepals short linear-spathulate 3—5 mm long. Stamens 6, 1.5—2.5 mm long.

Quelpaert: in sylvis Hallaisan, 1000 m (Taquet, no. 1619—Type, K; 1616, K; 5228, TI); (Faurie, no. 265 & 2106, KYO); (T. Nakai, no. 4858, TI); the same, 800 m (S. Kitamura, Jul. 19, 1930, KYO).

The variety grows on mountain-side of Mt. Hallaisan (Hannasan) at 800—1000 m in altitude. It is a small race resembling the plants of Is. Yakushima, and has narrow leaves with the obtuse tip, slender petioles, and shorter upper tepals 3—6 mm long. The similar form occurs on Mt. Rokkō near Ōsaka and Mt. Odake of Is. Koshiki of Kyushu.

subsp. **Hisachiana** (Okuyama) Hara, stat. nov.

C. japonica var. *Hisachiana* Okuyama in Journ. Jap. Bot. **27**: 268 (1952)—Kurosawa et Hara, l. c. 43 (1960)—Hara, l. c. 36 (1962)—Ohwi, l. c. 281 (1965); l. c. 333 (1965).

Radical leaves ovate to oblong 1—6 cm long 6—20 mm wide green opaque above crispulate on the margin. Stem 8—35 cm high. Upper tepals 4, 3—5 mm long 0.6 mm wide near the top spreading; lower two present 1.5—2 mm long. Stamens 6, 1.5—2 mm long. Pollen grains $16-22 \times 19-26 \mu$ in size. Chromosome number $2n=42$.

Central Honshu. Prov. Musashi: Kasumimura (T. Satow, Jun. 3, 1951—type, TNS); Kawamata (K. Hisauti, no. 2718, May 19, 1940, TI); Osogimura (T. Satow, no. 7495, Oct. 23, 1949, TI); Ogamiyama (M. Mizushima, May 25, 1952, TI).

Distr. C. Japan (Prov. Musashi).

This subspecies closely resembles a small race of *C. japonica*, but the flowers are smaller, the upper tepals are 3—5 mm long, and the lower tepals are present. It occurs in limited areas on the mountain side of the Kwantô district quite isolated from the main distribution area of the species (cf. Fig. 1). Although the outer morphological differences from the mother species are slight, the subspecies has $2n=42$ chromosomes, and the pollen grains are slightly larger. In the genus, the plants with the higher chromosome number are smaller and grow in very limited areas, as compared with those with the lower number. From evolutionary point of view, this subspecies isolated from *C. japonica* cytogenetically and geographically may be worthy of recognition as a separate species.

subsp. **minoensis** (Hara) Hara, stat. nov.

C. japonica var. *minoensis* Hara in Journ. Jap. Bot. **36**: 271, fig. (1961); in Act. Phyt. Geobot. **20**: 36, f. 1 C & 3 (1962)—Ohwi, l. c. 333 (1965).

Radical leaves *oblanceolate* ± obtuse at the top attenuate to the winged petiole 2—8 cm long 1—2 cm wide *thicker* dark green and *lustrous* above slightly crispulate on the margin; main lateral veins impressed above and elevated beneath. Stem 12—30 cm high. Cauline leaves 4—8, 1—3 cm long 1—3 mm wide. Tepals 6 linear-spathulate obtuse; upper ones 3—6 mm long, 0.7—0.8 mm wide; lower ones 1.5—2 mm long. Stamens 6, 1—1.5 mm long. Pollen grains $16-19 \times 19-24 \mu$ in size. Chromosome number $n=21$ & $2n=42$.

Central Honshu. Prov. Mino: north of Kanbara (Hara & Kurosawa, Jun. 5, 1961—type, TI); Kitayamamura (K. Inami, May 20, 1956, KYO).

Distr. C. Japan (Prov. Mino).

This subspecies can be distinguished from all other races by narrow thicker and lustrous leaves with main lateral veins impressed above, short spatulate upper tepals 3—6 mm long, and $2n=42$ chromosomes (Pl. XVIII, g). In the chromosome number and pollen grains, it agrees with subsp. *Hisauuchiana*, but is separable from the latter by the character of leaves. The plant has been known only from two spots on hillside of prov. Mino at 220—300 m high above the sea-level, and is growing in wet rocky place of Paleozoic chert mixed with siliceous limestone. In the neighbouring valleys, *C. japonica* var. *japonica* with $2n=24$ chromosomes is more widely distributed, and is generally larger and has broader thinner opaque leaves, and longer upper tepals.

2) ***Chionographis Merrilliana*** Hara, sp. nov. (Pl. XVII, c & d)

C. japonica Maxim. sensu Merrill in Lingn. Sci. Journ. 5: 46 (1927).

C. chinensis Krause sensu Merrill, l. c. 13: 20 (1934)—Hara, l. c. 34 (1962),
p. p.

Siraitos chinensis Wang et Tang, l. c. 109 (1949), p. p.

Rhizoma breve crassum. Folia rosulata elliptica vel oblonga apice rotundata vel breviter acutiuscula 12—50 mm longa 7—21 mm lata margine crispulata subtus nervis lateribus non elevata, basi in petiolum 4—25 mm longum cuneatim attenuata. Caulis 12—25 cm altus. Folia caulina 4—7 parva oblonga vel lanceolata acuta 5—10 mm longa 2—4 mm lata. Spica 3—6 cm longa subdensiflora. Flores albi fragrantes sessiles. Tepala superiora elongata *spathulato-linearia* 3—5 mm longa, in parte superiore 0.4—0.5 mm lata. Stamina 6 inaequalia, longiora 2—3.5 mm longa; filamenta filiformia; antherae 2-loculares lateraliter dehiscentes. Grana pollinis $16-17 \times 18-20 \mu$. Styli 3, 3.5—1 mm longi. Capsulae obovato-trigonae basi attenuatae 3 mm longae 1.5 mm crassae. Semina fusiformia 2—2.5 mm longa basi caudato-apiculata.

China. Kwangtung: Ngok Shing Shan, Sai-lin-shan Village, Sin-fung Distr. (Y. W. Taam, no. 453, Apr. 1938, fl.—type in A); Naam Kwan Shan, Tsengshing Distr. (W. T. Tsang, no. 20386, Apr. 30, 1932, fr., TI, NY; no. 20345, NY); Tsunghua Distr. (W. T. Tsang, no. 24930, Mar. 1935, A).

Kwangsi: without special locality (C. Wang, no. 39123, A).

Distr. S. China (Kwangtung, Kwangsi, Hainan?).

The species is most closely allied to *C. japonica* as suggested by Merrill, and is distinguished from a small race of the latter by longer slender filaments, obovate

capsules, seeds tailed at the proximal end (Fig. 3, c & d), and shorter cauline leaves. In general appearance, it resembles *C. japonica* subsp. *Hisachiana*.

It differs from *C. chinensis* in having shorter spatulate tepals broader in the upper part, and 2-celled anthers.

I have named this species after the late Prof. E. D. Merrill who first recorded the genus from China.

3) ***Chionographis Koidzumiana*** Ohwi in Bot. Mag. Tokyo **44**: 565 (1930)—Murata in Act. Phyt. Geobot. **15**: 47 (1953); **15**: 158, fig. (1954)—Ohwi, Fl. Jap. 283 (1953); ed. engl. 281 (1965); ed. rev. 333 (1965)—Hara, Distr. Map. Flow. Pl. Jap. **2**: map 194 (1959); in Act. Phyt. Geobot. **20**: 34 (1962)—Kitamura et al., Col. Ill. Herb. Pl. Jap. **3**: 153, f. 105, 4 (1964).

C. sparsa F. Maekawa in Journ. Jap. Bot. **11**: 378, f. 9 (1935)—Ohwi, l. c. 283 (1953).

Siraitos sparsus (Maekawa) Wang et Tang in Contr. Inst. Bot. Nat. Acad. Peip. **6**: 110 (1949).

S. Koidzumianus (Ohwi) Wang et Tang, l. c. (1949).

S. formosanus Wang et Tang, l. c. (1949).

C. Koidzumiana var. *mikawana* Ohwi et Okuyama in Journ. Jap. Bot. **28**: 304, fig. (1953).

Radical leaves oblong-lanceolate to oblong, elliptic or ovate somewhat obtuse or acutish at the apex, 0.8—7 cm long 6—30 mm wide crispulate on the margin, green opaque; petioles generally long and slender 8—60 mm long. Stem 5—45 cm high. Cauline leaves 4—16, linear to lanceolate 6—40 mm long 2—5 mm wide. Spike many or sometimes several-flowered, dense or loose 2—16 cm long. Upper tepals 4 or 3 (2), *filiform* sometimes slightly thickened in the upper part 8—20 mm long 0.2—0.3 mm wide spreading *greenish white or dark purplish*; lower ones lacking or very short. Stamens 6, 1—2 mm long much shorter than tepals, white or purplish; filaments thick *filiform*; anthers *confluent* at the apex *into one cell*. Pollen grains 13—15×16—18 μ in size. Capsules oblong-ovate or ovate 2—3.5 mm long 1.5—2 mm wide ascending. Seeds ca. 3 mm long including the tail

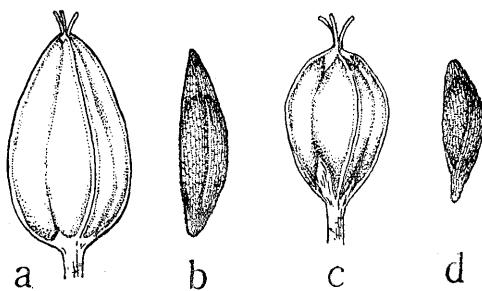


Fig. 3. Capsules and seeds. $\times 16$. a, b. *Chionographis japonica*. c, d. *C. Merrilliana*.

at the distal end.

Honshu. Prov. Mikawa: Tomiyama-mura (K. Inami, May 31, 1953, type of var. *mikawana*, TNS). Prov. Kii: Mt. Nachi (J. Ohwi, May 12, 1929, type of *C. Koidzumiana*, KYO, TI). Prov. Mino: north of Ikedayama (Fukuoka, May 24, 1963, KYO). Shikoku. Prov. Tosa: Yasui (T. Yoshinaga, Jun. 12, 1927, TI); Tomiokamura (Murata & Shimizu, May 26, 1956, KYO). Kyushu. Prov. Hizen: Mt. Kurokami (T. Baba, May 17, 1963, TI).

Is. Yakushima: cult. in Tokyo (F. Maekawa, Apr. 15, 1935—type of *C. sparsa*, TI); Mt. Yae-dake, above 1000 m (J. Sugimoto, May 25, 1927, TI).

Distr. W. Japan. S. Honshu (Mikawa, Mino, Kii), Shikoku (Iyo, Tosa), and Kyushu (Hizen, Hiuga, Is. Yakushima).

The species grows in wet mossy places or on mossy rocks sporadically in small limited areas, and is never sympatric with *C. japonica*. It is variable especially in size, as shown by Murata (1954). The plants from Is. Yakushima are often small, and have narrower leaves with a slender petiole, and loose spikes (Pl. XVIII, e).

The type of *Siraitos formosanus* was cited as ‘in insula Formosa 1928 Juni ex Hb. G. Masamune’, but Dr. Masamune kindly informed me that *Chionographis* has never been collected in Formosa, so the specimen must have been collected from Yakushima.

4) ***Chionographis chinensis*** Krause in Notizbl. Berlin **10**: 807 (1929)—Hara, l. c. 34 (1962), p. p.

Siraitos chinensis (Krause) Wang et Tang, l. c. 109 (1949), p. p.

Radical leaves oval to elliptic or obovate roundish or acutish at the top 16—100 mm long 10—45 mm wide crisplulate on the margin herbaceous; petioles 15—35 mm long. Stem up to 32 cm high. Cauline leaves up to 14 lanceolate or oblong acutish 6—16 mm long 2—3.5 mm wide. Spike up to 15 cm long densely many-flowered. Upper tepals *filiform* 7—8 mm long slightly thickened in the upper part 0.2 mm wide. Stamens 6, 1—2.5 mm long; filaments *filiform*; anther *confluent* at the top in one cell. Pollen grains 17—18×20—21 μ in size. Capsules *obovate-trigonous* attenuate to the base 2.5 mm long 1.2 mm wide (always?) spreading. Seeds fusiform 1.7 mm long, *apiculate at both ends*.

China. Kwangsi: Shuen-yuen (T. S. Tsoong, no. 81600, May 13, 1936, fl. A). N. Luchen, Yuan Tung Shen, W. of Shan Fang, 1800 ft. (R. C. Ching, no. 5753, Jun. 6, 1928, fr. TI, NY).

Distr. S. China (Kwangsi).

All Chinese specimens have hitherto been identified as *C. chinensis*. Now it became clear that two species occur in South China. The type specimens of *C. chinensis* from Kwangsi (S. S. Sin, nos. 8088, 9038 & 8962) are not extant at Berlin-Dahlem in 1968, but I have examined two collections from Kwangsi (Pl. XVII, a—b) which are referable to *C. chinensis*. Although it is difficult to identify *C. chinensis* exactly from the original description, the words 'Tepala . . . usque ad 8 mm longa', and 'antherae . . . thecis divergentibus' seem to suggest the species defined above rather than *C. Merrilliana*.

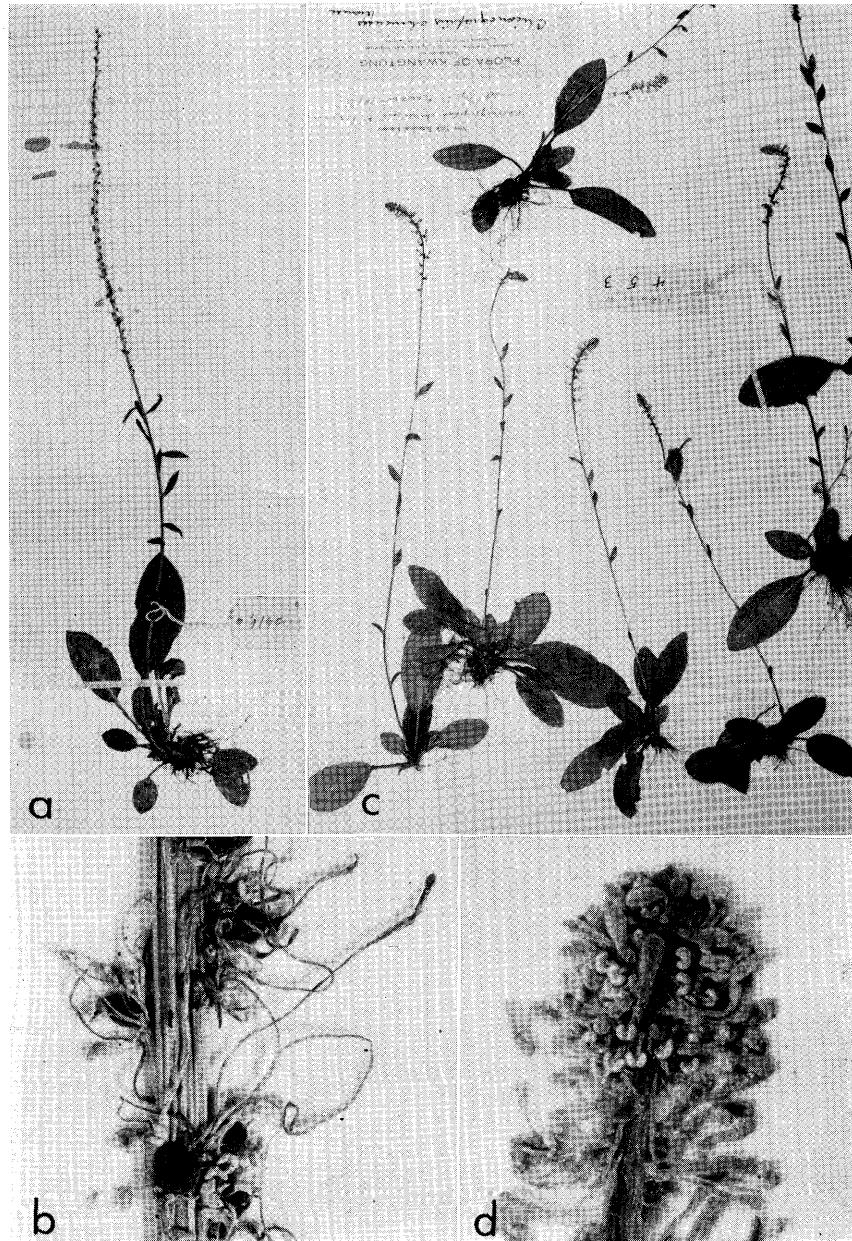
Explanation of plates

- Plate XVII. a. *Chionographis chinensis* Krause. Kwangsi (Tsoong no. 81600). $\times 1/4$. b. The same, a part of spike. $\times 6$. c. *C. Merrilliana* Hara (Taam no. 453—type). $\times 1/4$. d. The same, a part of spike. $\times 6$.
- Plate XVIII. e. *Chionographis Koidzumiana* Ohwi. Yakusima. $\times 2$. f. Somatic chromosomes of *C. Koidzumiana*. Yakusima. $\times 1300$. g. Somatic chromosomes of *C. japonica* subsp. *minoensis*. Kanbara, Mino. $\times 1300$.

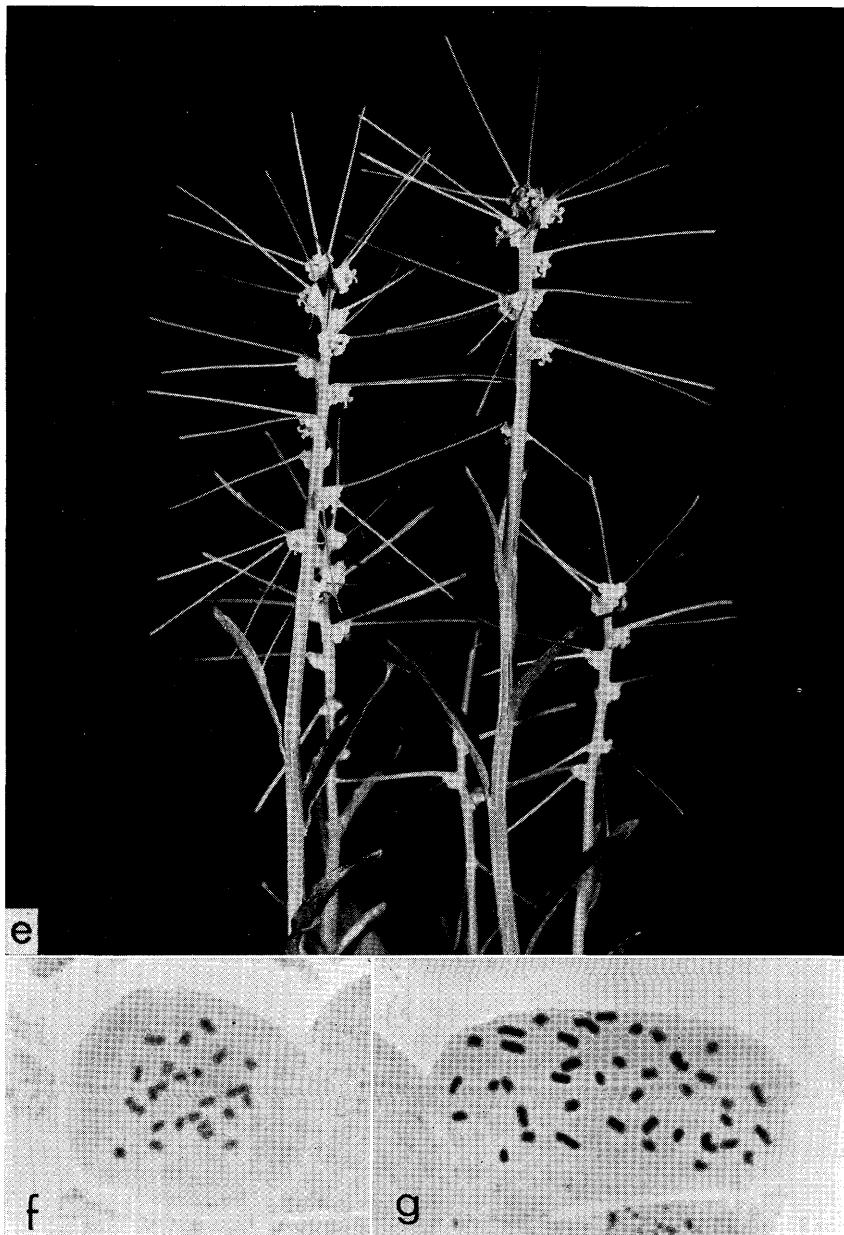
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シライトイソウ属(ユリ科)は東亜特産のきわめて特異な属であり、最も近縁なものは北米東部産の *Chamaelirium* 属である。日本産の種類の変異については植物分類地理 20: 34—38 (1962) に記したが、今回中国大陸産の標本を検討することができたので本属全体をまとめてみた。最も注目すべきは中国大陸においても日本のシライトイソウとチャボシシライトイソウに対応する 2 種があることが明らかになったことである。*Chionographis chinensis* Krause は基準標本がベルリンに現存せず同定に多少疑問が残るが、シライトイソウに近い方のものを新種として記載した。更に面白いのは日本産は蒴果がみな卵形で種皮は上端が凸出しているのに対し、中国産は共に蒴が倒卵形で種皮は下端に凸出していることである。また中国産の花粉はシライトイソウよりやや大きく高倍数体である可能性もある。なおシライトイソウとチャボシシライトイソウの蕊の差異は前川博士が指摘されたが、稀に 2 個の蕊室が上端でわずかに連なり 1 室への移行を示す場合があり、この性質で本属を 2 節に分けるには不十分と思われるが種の特徴にはとりうると思う。花被片の形についても同様である。

アズマシライトイソウとミノシライトイソウは前報に述べたように共に染色体数が $2n=42$ で他のシライトイソウの $2n=24$ と異なり基本数もちがっていると考えられ、更に地理的にも隔離されているので、すでに種分化をなしとげたともみられるが、外部形態的差異の小さいことからここではシライトイソウの亜種として扱った。



H. HARA: Revision of *Chionographis*



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